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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,144	03/18/2004	Kazuhiko Hayashi	02230028BB	7124

30743 7590 06/10/2005

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/803,144

Applicant(s)

HAYASHI ET AL.

Examiner

William J. Klimowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-63 is/are pending in the application.
- 4a) Of the above claim(s) 25 and 27-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-19, 21-23 and 26 is/are rejected.
- 7) ☒ Claim(s) 20 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continuation

The instant application is a division of U.S. Patent Application Serial Number 10/442,209, filed on May 21, 2003, now U.S. Patent No. 6,747,853, which itself was a division of U.S. Patent Application Serial Number 09/916,529, filed on July 30, 2001, currently pending.

Claim Status

Claims 1-14 have been voluntarily cancelled by the Applicants in an amendment filed March 18, 2004.

Claims 15-63 are currently pending.

Claims 25, 27-63 have been withdrawn from consideration as being drawn to a non-elected embodiment.

Drawings

The corrected drawings were received on February 8, 2005. These drawings are approved.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 15-19, 21-23 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al. (US 6,266,218 B1).

As per claim 15, Carey et al. (US 6,266,218 B1) discloses a magneto-resistance effect element (e.g., see the embodiment of FIG. 14) comprising: a lower conductive layer (lowermost depicted 134 in contact with an unshown "bottom electrical lead layer" - see COL. 10, lines 43-45); a fixed layer (126) provided on the lower conductive layer (including unshown bottom lead layer on lowermost depicted 134) and having a pinned orientation of magnetization (represented by "arrow" vector coming out of the page -i.e., the circled "x"); a first non-magnetic layer (130) provided on the fixed layer (126); a free layer (122) provided on the first non-magnetic layer (130) and having an orientation of magnetization (represented by "arrow" vector pointing to the right) varied by a magnetic field applied thereto; a first magnetic layer (e.g., 84) provided on the free layer (122) and magnetically coupled to the free layer (longitudinal bias provided in part by layer (84) of laminate layer (90)); a second magnetic layer (e.g., 86) provided on the first magnetic layer (84) ("on" being used to indicate contact with or extent over [a surface] regardless of position) and magnetically coupled to the first magnetic layer (84) (through exchange coupling layer (88)); and a vertical bias layer (uppermost depicted 134 - AF layer - which is in direct contact with (86)) for applying a magnetic field (antiferromagnetically via exchange coupling) to said first (84) and second (86) magnetic layers, and a sense current for detecting a change in electrical resistance of said first non-magnetic layer (130) flows

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substantially in perpendicular relation to said first non-magnetic layer (130) (e.g., see discussion at, *inter alia*, COL. 10, lines 33-55).

As per claim 16, wherein said first magnetic layer (84) is equal to or greater than said free layer (122) in length in the direction of the magnetic field applied by said vertical bias layer (AF layer 134) - as seen in FIG. 14.

As per claim 17, wherein said second magnetic layer (86) is equal to or greater than said free layer (122) in length in the direction of the magnetic field applied by said vertical bias layer (AF layer 134) - FIG. 14.

As per claim 18, further comprising a fixing layer (124), disposed between said lower conductive layer (unshown bottom lead) and said fixed layer (126), for pinning the orientation of magnetization of said fixed layer (126).

As per claim 19, further comprising a second non-magnetic layer (e.g., 88) between said free layer (122) and said first magnetic layer (84) (i.e., see FIG. 14 where layer (88) indeed intervenes at least for a prescribed lateral extent, between (84) and (122)).

As per claim 21, wherein said free layer (122) is magnetically coupled to said first magnetic layer (84) by anti-ferromagnetic coupling or ferromagnetic coupling - it acts as part of the longitudinal biasing structure - which is also known in the art as "vertical biasing" - the terms are used interchangeably as it applies to biasing the free layer into a single magnetic domain state to obviate magnetic domain wall movement called Barkhausen noise).

As per claim 22, wherein said first magnetic layer (84) is magnetically coupled to said second magnetic layer (86) by anti-ferromagnetic coupling or ferromagnetic coupling (via coupling layer (88)).

As per claim 23, wherein the product of saturation magnetization and film thickness of said first magnetic layer (84, which corresponds to 12 in FIG. 2A) is substantially equal to the product of saturation magnetization and film thickness of said second magnetic layer (86, which corresponds to 14 in FIG. 2A). See Figure 2A and also COL. 2, line 66 through COL. 6, line 21.

As per claim 26, wherein at least part of said second magnetic layer (86) is in direct contact with said vertical bias layer (AF layer (134)).

Response to Arguments

Applicants' arguments filed February 8, 2005 have been fully considered but they are not persuasive.

At page 19 of the Applicants' response filed on February 8, 2005, the Applicants contend:

In making the rejection the Examiner inaccurately reads Applicant's claims on the patent to Carey et al., but it should be respectfully noted that the structure shown by Carey et al. is very different from the claimed device. For instance, the Examiner refers to structure designated by Carey et al. with reference number 134 as a lower conductive layer on line 5, page 5, of the Office Action and as a vertical bias layer on page 5, line 16, of the Office Action.

The Examiner respectfully disagrees. The Examiner points out to the Applicants that Carey et al. (US 6,266,218 B1) discloses both the lower conductive layer (lowermost depicted 134 in contact with an unshown "bottom electrical lead layer" - see COL. 10, lines 43-45) and the vertical bias layer (uppermost depicted 134 - AF layer -which is in direct contact with (86))

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as designators 134. This is not a “mistake” by the Examiner, alleged by the Applicants. In fact, the Examiner clearly articulated what each respective designator 134 was cited clearly and unambiguously in the Office action, so that no confusion would exist. Thus, the Applicants' comments are deemed meritless.

The Applicants further state:

The Examiner mistakenly refers to a double layered bias structure of the reference as analogous to first and second magnetic layers of the claimed invention. This is not correct, the Applicant shows a first magnetic layer 8b, second magnetic layer 12 and vertical bias layer 2b separately. (See Figure 64 of the present invention) There is no information in the Applicant's disclosure that bias layer is used like a first or second magnetic layers or vice versa ... Carey et al. does not show two magnetic layers and a separate bias layer.

Id.

At the outset, the Examiner is not rejecting the invention as disclosed by the Applicants, but merely the invention as claimed by the Applicants. More concretely, the Examiner strenuously maintains that as per claim 15, Carey et al. (US 6,266,218 B1) **factually** discloses a first magnetic layer (e.g., 84) provided on the free layer (122) and magnetically coupled to the free layer (longitudinal bias provided in part by layer (84) of laminate layer (90)). Carey et al. also **factually** discloses a second magnetic layer (e.g., 86) provided on the first magnetic layer (84) (“on” being used to indicate contact with or extent over [a surface] regardless of position) and magnetically coupled to the first magnetic layer (84) (through exchange coupling layer (88)). Carey et al. also **factually** discloses a vertical bias layer (uppermost depicted 134 - AF layer -which is in direct contact with (86)) for applying a magnetic field (antiferromagnetically via exchange coupling) to said first (84) and second (86) magnetic layers. It is unclear as to

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how the Applicants can assert that the first, second and vertical bias layers as identified by the Examiner cannot be reasonably considered, by a preponderance of the evidence, “two magnetic layers and a separate bias layer” as argued by the Applicants. (note that the word “separate” is nowhere to be found in claim 15).

Pertaining to the claims rejected under 35 U.S.C. § 102 as being anticipated by the disclosure of Carey et al. (US 6,266,218 B1) the following should be noted. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); *cert. dismissed*, 468 U.S. 1228 (1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 72.1 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

The Examiner, as clearly articulated in the rejection, *supra*, has set forth a one-to-one correspondence with each and every element of the *claimed* invention. More concretely, as recited MPEP§2106:

Office personnel are to give claims their ***broadest reasonable interpretation*** in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). ***Limitations appearing in the specification but not recited in the claim are not read into the claim.*** *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. . . . The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. . . . An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.”). [Emphasis in bold italics added].

Moreover, one must also bear in mind that limitations contained within Applicants' arguments cannot be read into the claims for the purpose of avoiding prior art. *In re Sporck*, 386 F.2d 924, 155 USPQ 687 (CCPA 1968).

As set forth in the MPEP§ 706, "the standard to be applied in all cases is the "preponderance of the evidence" test. In other words, an examiner should reject a claim if, in view of the prior art and evidence of record, it is more likely than not that the claim is unpatentable." Clearly, the Examiner has established that one of ordinary skill in the art would *reasonably* construe the one-to-one correspondence with each and every element of the *claimed* invention, in the manner set forth in the rejection, *supra*, by at least the *preponderance* of the evidence. The Applicants' arguments have fallen well short of rebutting the Examiner's *prima facie* case of anticipation.

Allowable Subject Matter

Claims 20 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

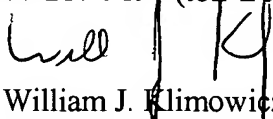
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William J. Klimowicz
Primary Examiner
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WJK